Biodegradation indicators

Website: https://www.bco-dmo.org/dataset/771930
Version: 1
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Project
» Collaborative Research: Oxygenation of Hydrocarbons in the Ocean (Oxygenation of Hydrocarbons)

Contributors	Affiliation	Role
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Table of Contents

Dataset Description

These results were published in the open access article "Partial Photochemical Oxidation Was a Dominant Fate of Deepwater Horizon Surface Oil" (Ward et al., 2018).

Related Datasets:
* Sea surface oil: https://www.bco-dmo.org/dataset/771924
* Deposited oil: https://www.bco-dmo.org/dataset/771927
* Photochemical oxidation: https://www.bco-dmo.org/dataset/771933

[table of contents | back to top]

Related Publications

Ward, C. P., Sharpless, C. M., Valentine, D. L., French-McCay, D. P., Aeppli, C., White, H. K., … Reddy, C. M. (2018). Partial Photochemical Oxidation Was a Dominant Fate of Deepwater Horizon Surface Oil. Environmental Science & Technology, 52(4), 1797–1805. doi:10.1021/acs.est.7b05948
Results

[table of contents | back to top]

Parameters

Parameters for this dataset have not yet been identified

[table of contents | back to top]

Project Information

Collaborative Research: Oxygenation of Hydrocarbons in the Ocean (Oxygenation of Hydrocarbons)

Coverage: Gulf of Mexico between Mississippi Slope, Gould Basin, and Castillo Basin (27 N 91 W)

NSF abstract:
More than 400,000 tons of petroleum hydrocarbons are released annually into the ocean, where they are subject to physical, chemical and biological processes, known as weathering, that are known to remove select hydrocarbons from the ocean. However, little attention has been given to the residues left by the weathering of oil, and studies indicate that oxygenation of these hydrocarbons can play a part in the formation of recalcitrant tar and toxic compounds. To address this gap, researchers from Woods Hole Oceanographic Institution, University of Mary Washington, and University of California Santa Barbara will conduct research to lay a scientific foundation for understanding 1) which processes control the formation of oxygenated hydrocarbons, 2) the rates of these processes, 3) the identity of the major products, 4) the rates at which they are formed and destroyed, and 5) for distinguishing photochemical oxygenation from biological oxygenation. The results from these experiments will contribute to a better understanding of the petroleum oxygenation processes and the environmental fate of understudied oxygenation products.

Broader Impacts: This study will provide for several undergraduates and two postdoctoral scholars to be trained in innovative analytical and experimental techniques. The results of this effort will help regulatory agencies to define new analytical methods and target compounds for oil spill research, and will add to our understanding regarding the fate and impacts of hydrocarbons released into the ocean.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1333162

[table of contents | back to top]